

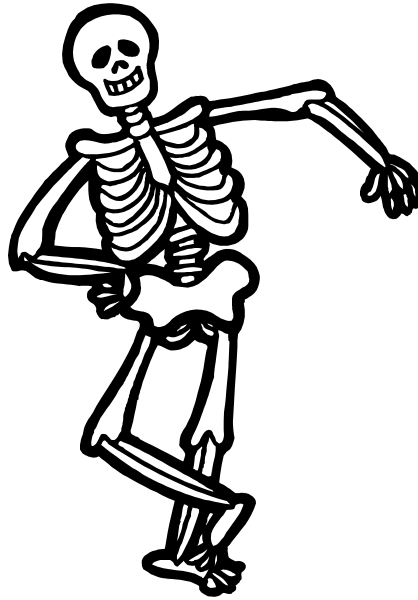
Week 1

Personal Profile

Introducing Muscles and Bones

This week you will:

- complete a Personal Profile
- learn about the skeletal system
- learn about the muscular system.



LESSON 1

For this lesson we will be asking you to complete a Personal Profile, giving details about your personal fitness, and sports and recreational interests. Please complete the Profile as honestly as you can, but if you feel uncomfortable about any of the questions, leave them out.

SEND**PERSONAL PROFILE**

NAME

AGE HEIGHT WEIGHT

Any recent injuries? How recent?.....

Are you diabetic? Yes/No

Are you epileptic? Yes/No

Are you asthmatic? Yes/No

Have you ever had a back complaint? Yes/No

Have you ever had a neck complaint? Yes/No

Are you a smoker? Yes/No

PHYSICAL ACTIVITY INVOLVEMENT**LIFESTYLE**

Do you try to eat healthy foods?

How much junk food do you eat in a week? (This includes soft drinks, chocolate, biscuits, chips, lollies, fried foods and fast/food or take-away meals.) Tick the appropriate response:

- a) None at all
- b) Maybe one or two junk-food items per week
- c) About 3-5 items per week (about 1 item every 2nd day.)
- d) 6-7 items per week (around one item per day.)
- e) More than 7 items per week (several items per day.)
- f) For every healthy item I eat, I eat the same amount of junk food.
- g) I must admit, I'm a junk-food junkie. Green beans are not part of my vocabulary.

How many hours per week do you spend watching television, videos, movies, playing computer games or surfing the Internet? _____

How many hours of sleep do you average per night? _____

How many hours per week do you spend walking or cycling to or from places? _____

Do you play in any sporting teams? _____

At what grade or level do you compete? _____

Are you generally

Inactive, Moderately active, Very active, Super active or Hyperactive?

(circle your answer) Why did you circle the answer you chose?

Do you consider yourself to be fit? (Explain your answer)

Do you think you will experience any difficulty completing the Fitness Testing and Training Program in Weeks 4 to 8 that forms part of this Course? Please explain.

LESSON 2

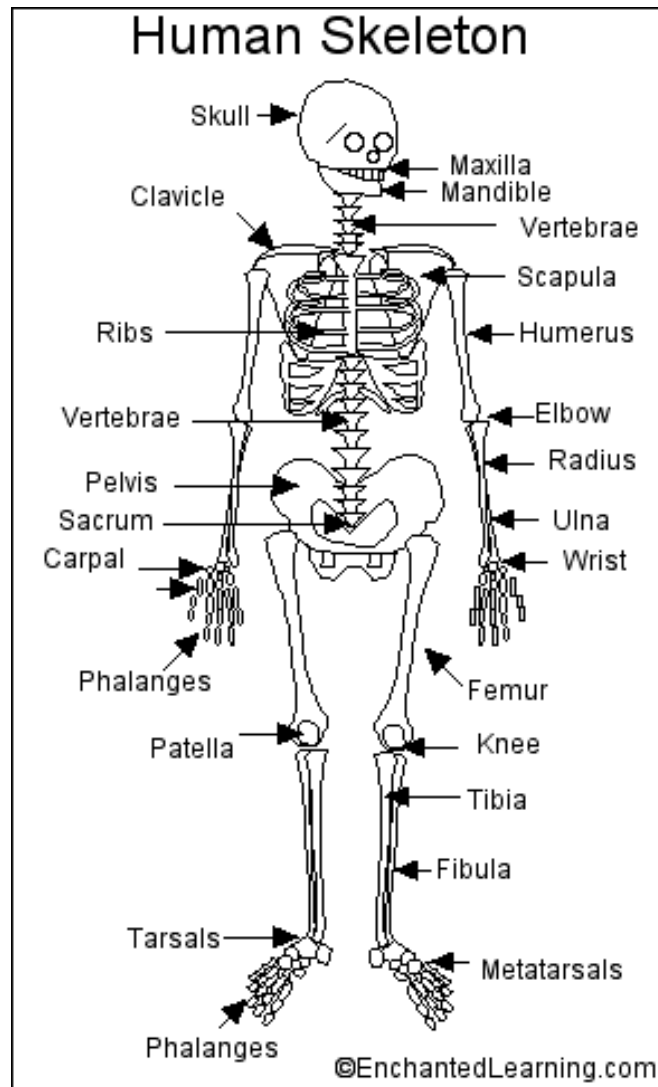
This week we will be looking at the two systems that are most important in the movement of the human body. Have you guessed what the systems are yet? If you thought of muscles and bones, you were right! Let us start with the bones



SKELETAL SYSTEM

Bones are arranged into a skeleton, which performs many important functions. The five main functions of the skeletal system are to:

1. Provide the *framework* to which the soft tissues (muscles, internal organs) attach, and gives our body shape.
2. *Movement* – the bones are the levers upon which our muscles pull.
3. *Protect vital organs*, for example the skull protects the brain, the ribs protect the heart and lungs.
4. *Blood cell formation* – the long bones contain bone marrow which produces all the new red blood cells and some of the white blood cells.
5. *Store mineral salts*, especially calcium.



The Skeleton

Take the time to study this diagram, look closely at the names of the bones and where they are located. Then look on your own body and try to locate the bones you have just learnt. You can use your hands to feel the bones just under the skin. Try repeating the name of the bone as you locate it on your own body. From now on try using the correct name for the bone wherever possible.

CLASSIFICATION OF BONES

Bones are classified depending on their shape.

Long Bones

As the name suggests, these bones are longer than they are wide and have a hollow shaft containing marrow. Examples of long bones are the femur, phalanges and humerus. They are suited to weight bearing activities because they can withstand great amounts of stress.

Short Bones

Short bones tend to be round, roughly having the same width and length, for example the carpals of the wrist and the tarsals of the foot.

Flat Bones

These bones have smooth and broad surfaces that provide protection for vital organs as well as an attachment for large muscle groups e.g. scapula, ribs, sternum and cranium.

Irregular Bones

Have no distinct size or shape e.g. the vertebrae

Sesamoid Bones.

This is unique type of bone as it is completely enveloped within a tendon. The best example of this is the kneecap or patella.

Joints

Joints occur when two or more bones meet or join together. There are three types of joints:

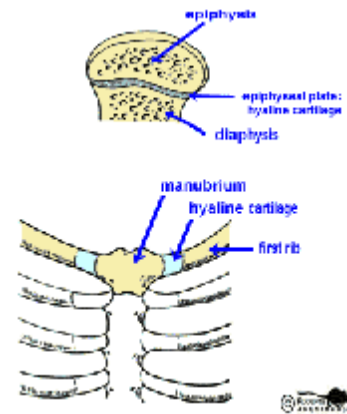


Immovable

Bones are fixed or fused together and no movement is possible, for example the skull, pelvis, sacrum and sternum.

Slightly movable

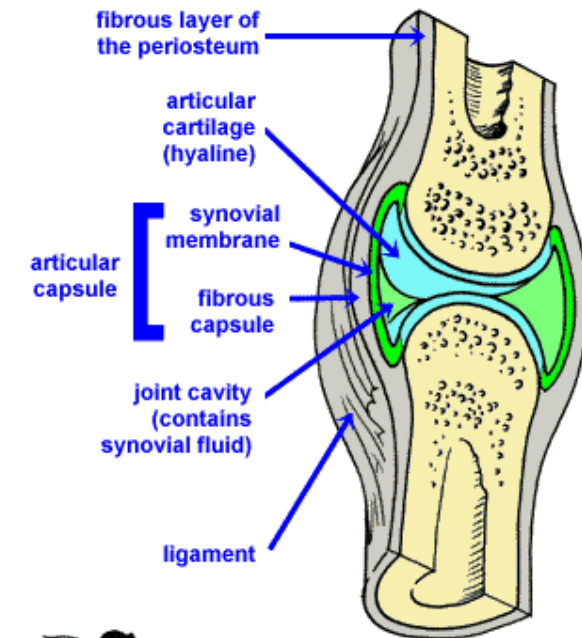
(cartilaginous): bones are joined by cartilage and only a small amount of movement is possible, for example ribs joining sternum, vertebrae of spine.



Freely movable

(synovial): Freely movable joints allow free movement in at least one direction, have cartilage, ligaments (join bone to bone) and lubricating fluid and are the joints which allow us to move and exercise. Most of our major joints are synovial for example, ankle, knee, hip, shoulder, arm, elbow, fingers, and wrist.

There are number of different types of synovial joints, each one capable of a different range of movement. We will look at just two of the more common synovial joints found in our body – the ball and socket and the hinge joints.

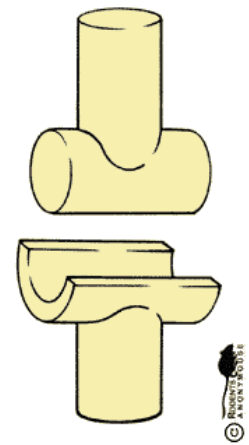


Ball and socket

In this type of joint the ball of one bone fits into the cup of the other, allowing a larger range of movement than any other joint. Examples are the hip and the shoulder joints.

**Hinge joint**

The movement of this type of joint is similar to door swinging on its hinges. It allows bending and straightening only. The more correct terms for these actions are flexion (bending) and extension (straightening). The elbow and the knee are examples of hinge joints.



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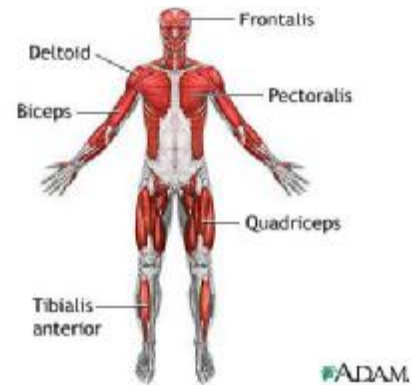
WORK FOR SUBMISSION LESSON 2

1. Describe the five functions of the skeleton.
2. Name the five types of bones and give one example of each.
3. Name the regions of the spine. State the number of vertebrae in each region. You may need to do research to find this out.
4. Name and give one example of each of the three different types of joints in the body.
5. Find a photograph of yourself. Paste it on to a piece of paper, and then identify on the photograph where the following bones are located. Be as specific as possible. If you do not have a current photo of yourself you might like to use a picture from a magazine or newspaper.

| | | | |
|----------|---------|---------|--------|
| clavicle | scapula | humerus | radius |
| patella | tibia | fibula | ribs |
| carpals | tarsals | femur | ulna |

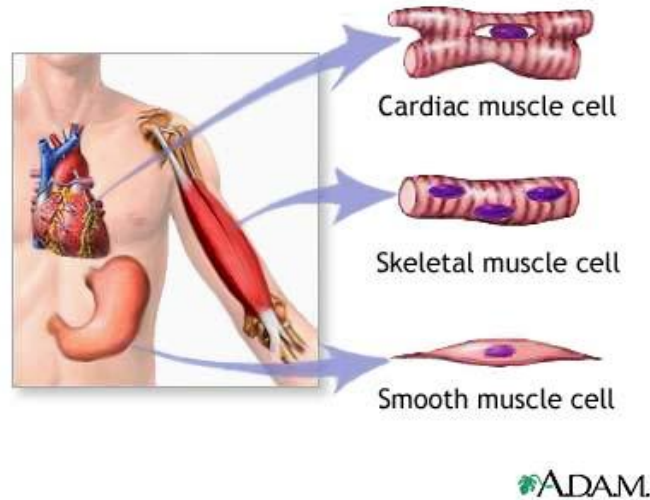
LESSONS 3 and 4**MUSCULAR SYSTEM**

The muscular system involves more than just the muscles we can see working everyday (skeletal muscles). Just as there are different types of bones, muscles can be classified into different types depending on their function.



The first type everyone should be familiar with, and are known as *skeletal or voluntary muscles*. The second type of muscle is known as *cardiac muscle* and makes up the heart. The final category of muscle is known as *smooth muscle*, and is found in the walls of internal organs.

1.10



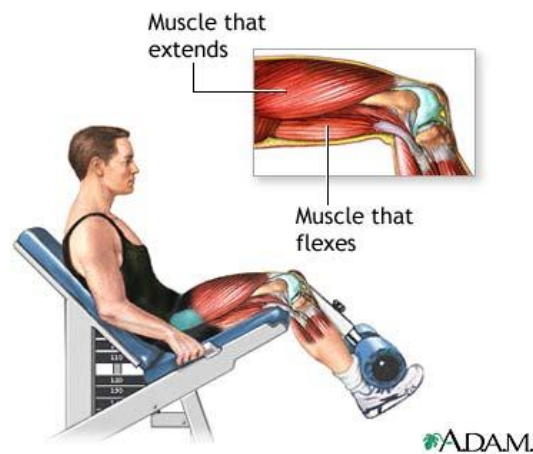
Look at all the diagrams of the major muscles. Take some time to identify these muscles on your body.

IMPORTANT NOTE

All muscles, no matter what type, are only able to contract and relax. They are unable to push. Most muscles therefore work in pairs or group to allow joints to move in two or more directions.

Skeletal Muscle

Skeletal muscles are attached to bones and by **pulling** on the bones are able to produce movement. This type of muscle requires nervous stimulation to contract and is therefore under conscious (or voluntary) control.



1.11

Skeletal muscles are very responsive to exercise, and their function and size can be improved through strength and/or endurance training. Skeletal muscles come in many different shapes and sizes, but they all have a certain number of characteristics in common.

Firstly Tendons. These are fibrous tissues that extend from the muscle at either end to join the bones.

Secondly Muscle belly. This is where the muscles fibres are concentrated before tapering into the tendon.

Cardiac Muscle

The muscle cells that make up the heart are known as cardiac muscle fibres, and contract spontaneously. In other words they require no voluntary nervous stimulation for them to function.

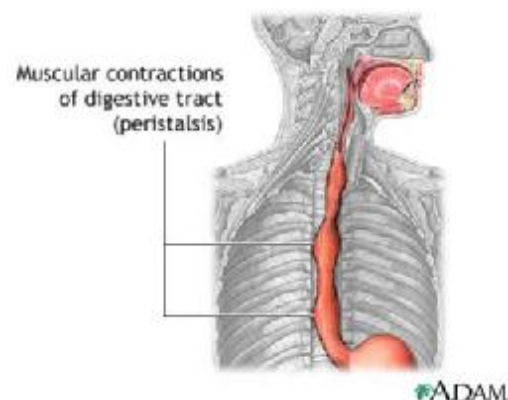


Smooth Muscle

Smooth muscles are used to propel material through hollow cavities within organs. This type of muscle can be found in the circulatory and respiratory systems and the

intestinal tract. The contraction of these muscles is generally slow and rhythmical, with no voluntary control eg. the movement of food through the intestinal tract. This occurs as the smooth

muscles of the digestive tract walls contract in a process referred to in scientific terms as *peristalsis*. This squeezing of digestive tract walls forces food through the intestines.



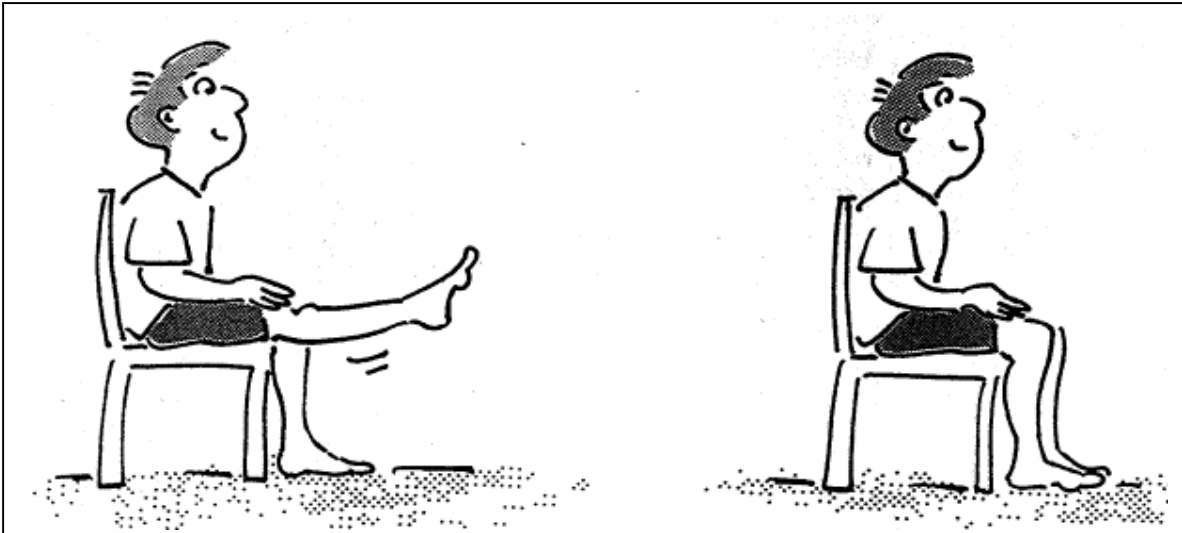
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WORK FOR SUBMISSION LESSONS 3 & 4

Sit on a chair with knees bent and feet on floor. Now straighten one leg, so that your foot is lifted off the floor. Lower the foot slowly back down.

Which muscles are getting shorter (contracting) which muscles are relaxing when the lower leg **is raised**?

1. q ----- are contracting, and
h -----are relaxing as the lower leg is raised
2. What happens to the **knee joint** when the muscles in the front of your thigh contract? Use the correct terminology.



3. Give the correct muscle name to each of the following. You may need to carry out further research to complete this task

tummy calf thigh
(front) chest bottom

Checklist

This week you should have submitted this work to your teacher. Please tick the items you have sent, and keep this as your record:

- Your Personal Profile
- Work on the skeletal and muscular systems

END OF WEEK 1



315 Clarendon Street, Thornbury 3071
PH: (03) 8480 0000 | Toll free 1800 133 511
FAX (03) 9416 8371 (Despatch)

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|----------------------|
| STUDENT NUMBER _____ |
| STUDENT NAME _____ |
| _____ |

SUBJECT Physical Education

33601

YEAR/LEVEL 9/10

WEEK 1



TEACHER _____

Fix your student barcode
label over this space.

Teacher barcode space.

PLEASE ATTACH WORK TO BE SENT.

NOTE: Please write your number on each page of your work which is attached to this page.

SEND

Please check that you have attached:

- q Your Personal Profile
- q Work on the skeletal and muscular systems

If you have not included any of these items, please explain why not.

Use the space on the back of this sheet if you have any questions you would like to ask, or problems with your work that you would like to share with your teacher.

YOUR QUESTIONS AND COMMENTS

DISTANCE EDUCATION CENTRE TEACHER'S COMMENTS

DISTANCE EDUCATION CENTRE TEACHER